What is claimed is:

1. A microarray having immobilized thereon a plurality of oligonucleotides complementary to sequence tags.

2. The microarray of claim 1 wherein the sequence tags have a random sequence.

3. A recombinant microorganism capable of expressing a specific receptor on its surface and containing a unique nucleic acid sequence tag.

4. A plurality of different recombinant microorganisms according to claim 3 wherein each different microorganism contains a different specific receptor and a different nucleic acid sequence tag.

5. The recombinant microorganism of claim 3 wherein the sequence tag is part of a nucleic acid containing at least part of an antibody gene.

6. The recombinant microorganism of claim 3 wherein the sequence tag is part of a nucleic acid containing at least part of a microorganism or cellular gene.

7. A nucleic acid labeled receptor comprising;
a specific binding receptor, and
a nucleic acid containing at least 13 nucleotides,
wherein the nucleic acid is physically or chemically bound to the specific binding receptor.

8. A plurality of nucleic acid labeled receptors according to claim 7 wherein each receptor specifically binds to a different ligand and is labeled with a nucleic acid having a different sequence.

9. The nucleic acid labeled receptor of claim 7 wherein the sequence tag is part of a nucleic acid containing at least part of an antibody gene.

10. A microarray comprising;
a solid phase containing a plurality of cells in a definable location,

a plurality of nucleic acids immobilized on the solid phase, wherein each cell of the solid phase contains all of the nucleic acids of a particular sequence, and

a nucleic acid sequence tag specifically hybridized to the nucleic acid.

11. The microarray of claim 10 wherein a plurality of nucleic acid sequence tags, each with a different nucleotide sequence, are hybridized to a plurality of different cells wherein all nucleic acid sequence tags of the same sequence are hybridized in the same cell of the solid phase.

12. The microarray of claim 10 wherein a plurality of discrete solid phase particles constitute the solid phase and wherein each of said particles constitute the cell.

13. The microarray of claim 10 wherein the sequence tag is part of a nucleic acid containing at least part of an antibody gene.

14. The microarray of claim 10 wherein the oligonucleotide sequence tag is part of a nucleic acid containing at least part of a microorganism or cellular gene.

15. A microarray comprising;

a solid phase containing a plurality of cells in a definable location,

a plurality of nucleic acids immobilized on the solid phase, wherein each cell of the solid phase contains all of the nucleic acids of a particular sequence and wherein a nucleic acid sequence for each of the nucleic acids is complementary to predefined sequence tags, each with a different nucleotide sequence.

16. The microarray of claim 15 wherein a plurality of discrete solid phase particles constitute the solid phase and wherein each of said particles constitute the cell.

17. The microarray of claim 15 wherein the sequence tag is part of a nucleic acid containing at least part of an antibody gene.

18. The microarray of claim 15 wherein the oligonucleotide sequence tag is part of a nucleic acid containing at least part of a microorganism or cellular gene.

19. A method of determining the presence of a ligand in a sample of mixture of different ligands comprising;

contacting at least one recombinant microorganism of claim 3 or the receptor of claim 7 under conditions suitable for binding of ligand to receptor,

separating bound receptors from unbound receptors,

detecting the presence of at least one sequence tag.

20. The method of claim 19 further comprising quantitatively determining the amount of the ligand in the mixture by determining the quantity of sequence tag from bound receptors.

21. The method of claim 18 further comprising simultaneously detecting the presence of plural different ligands in the sample by simultaneously detecting the presence of corresponding different sequence tags.

22. The method of claim 21 wherein the concentration of one ligand being detected is at a concentration at least ten fold greater than another ligand being detected in the sample.

23. The method of claim 22 further comprising quantitatively determining the amount of both ligands in the mixture by determining the quantity of sequence tags from bound receptors

24. The method of claim 19 further comprising labeling the nucleic acid containing the sequence tag.

25. The method of claim 19 wherein the presence of the nucleic acid containing sequence tag is detected by specific hybridization to a plurality of complementary nucleic acids which are physically separated or separable from each other such that one can determine which are hybridized.

26. The method of claim 25 in which said complementary nucleic acids are located in an array on a solid phase.

27. The method of claim 19 further comprising amplifying the number of molecules of nucleic acid containing the sequence tag.

28. The method of claim 19 wherein the ligands are proteins and the receptors are proteins expressed from a gene derived from an antibody.

29. The method of claim 19 wherein the receptor is on the surface of a virus.

30. The method of claim 27 wherein the nucleic acid containing the sequence tag is amplified by annealing to a primer and extending the primer.

31. The method of claim 19 further comprising the step of initially adding a known quantity of a control ligand to the sample wherein the concentrations of all other ligands in the sample may be determined relative to the control ligand.

32. A solid support having a plurality of ligands immobilized thereon and a plurality of receptors of claim 7 bound to the ligands.

33. A solid support having bound thereto a plurality of different recombinant microorganisms capable of expressing a specific receptor on its surface wherein the recombinant microorganism contains a heterologous gene encoding the receptor.

34. A solid support of claim 33 wherein the solid support is bound to a ligand and the ligand is bound to the receptor on the recombinant microorganism.

35. A method for fractionating a mixture of recombinant microorganisms, each capable of expressing a different specific receptor on a surface thereof comprising;

contacting the mixture with a solid support and allowing at least part of the mixture to become bound thereto,

removing unbound recombinant microorganisms.

36. The method of claim 35 further comprising eluting bound recombinant microorganisms from the solid support.

37. The method of claim 35 wherein the recombinant microorganisms are bound by the receptor to ligands immobilized on the solid support.

38. The method of claim 37 further comprising initially immobilizing ligands on the solid support.

39. The method of claim 37 further comprising binding the receptor to the ligands followed by immobilizing the ligands on the solid support.